Solid Waste Generation in British Columbia

2010-2025 Forecast

Prepared for the BC Ministry of Environment

June, 2012

BRITISH COLUMBIA | BCStats

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EXECUTIVE SUMMARY

Forecasting future waste quantities is an integral element of waste management that assists in the management and planning of waste programs. With the expansion of existing local government recycling, industry product stewardship and other diversion programs and with the implementation of new programs, it should follow that less waste ends up in British Columbia's landfills. However, it is important to recognize that even with an increase in diversion rates, waste generation in absolute terms could potentially grow by a larger amount, such that the amount of municipal solid waste being handled by landfills could continue to grow.

This report highlights three projection scenarios with varying degrees of measures taken to divert waste from disposal: one scenario where the current diversion rates (2010 base year) remain unchanged, but plans for new industry product stewardship programs proceed as expected, except enhanced construction, renovation and demolition (CR&D) waste programs do not materialise as quickly as expected; a second scenario that predicts the potential change in disposal rates if recycling/diversion rates were to increase, particularly with respect to organics, and where CR&D programs are implemented; and a final scenario whereby aggressive strides are made in order to push recycling/diversion levels to new heights.

Current Estimates

In 2010, an estimated 2.9 million tonnes of solid waste were disposed of in BC's landfills. Meanwhile, approximately 1.9 million tonnes of material were diverted from landfills for recycling and a further 242 thousand tonnes were collected through stewardship programs. This amounts to a provincial diversion rate of 43%.

Scenario 1

It is predicted that overall waste generation will climb by 17.7% between 2010 and 2025. Under these circumstances, if the current diversion rate remains unchanged, it is estimated that disposal tonnage in BC will reach 3.1 million tonnes (+7.7%) by 2015 and 3.4 million tonnes (+17.5%) by 2025. At the same time, the amount of materials recycled and diverted by local governments is forecast to decline 16.4% to 1.6 million tonnes in 2025 due to a shift of a significant portion of goods currently collected through recycling programs toward new product stewardship programs. As a result, industry product stewardship recycling/diversion is predicted to climb substantially (+292.3% to just under one million tonnes).

Scenario 2

In this scenario, diversion rates could potentially jump from 43% to 62% between 2010 and 2025. In this setting, waste disposed of in landfills is projected to decline from 2.9 million tonnes in 2010 to 2.3 million tonnes (-21.8%) in 2025, while it is estimated that local government recycling and other diversion could jump from 1.9 million tonnes to 2.5 million tonnes (+29.2%) over the same period. Industry product stewardship programs would also play a significant role in the increased diversion of waste, climbing 376.5% from 242 thousand tonnes to 1.2 million tonnes.

Scenario 3

The third and final scenario examined, whereby hard-line strides are made in order to push diversion levels to new heights, predicts a 69.5% leap (to 3.3 million tonnes) in local government recycling/diversion and a 496.2% jump (to 1.4 million tonnes) in industry product stewardship recycling/diversion between 2010 and 2025. This would cause the volume of waste disposed of in landfills to shrink by nearly two thirds (-61.6%) to 1.1 million tonnes by the year 2025.

INTRODUCTION

Predicting future waste quantities is a vital component of waste management that aids in managing and planning of waste programs. Waste projection results are valuable tools that can be used to inform policy decisions as well as in the development and enhancement of waste collection and treatment services.

This report serves to offer a solid waste projection for British Columbia based on available reliable data and methods. It also illustrates the limitations in existing data for the province's waste management industry. It contains a projection of British Columbia's solid waste[1] flow patterns and focuses on three key sectors: Residential; Industrial, Commercial and Institutional (IC&I); and Construction, Renovation and Demolition (CR&D). British Columbia is comprised of 29 unique regional districts (RDs), each of which are responsible for managing waste residuals and tracking waste statistics and composition at landfills within their respective municipalities. The province and its regional districts rely on solid waste studies to provide information about the various waste streams and to assist with the development of waste reduction strategies.

Before examining the overall picture of solid waste flow in British Columbia, it is useful to provide a brief summary of the key terminology surrounding waste management, the sources and methods used to develop estimates and identify some of the difficulties with data for this industry.

KEY SECTOR DEFINITIONS[2]

Residential

Residential waste is solid waste produced by all residences and includes waste that is picked up by the municipality (either using its own staff or through contracting firms), and waste from residential sources that is self-hauled to depots, transfer stations and disposal facilities.

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[1] For the purpose of this report, "waste" is understood as a material that is unwanted by its producer. The unwanted materials may be by-products of a production process or, alternatively, they might be products, the inherent value of which has been consumed from the perspective of the current holder.

[2] For more detailed information on division of waste by sector, as well as how sectors are determined, see the BC Stats report: "British Columbia's Solid Waste Flow, 2006" (February, 2010) and the Natural Resource Canada report: "An Analysis of Resource Recovery Opportunities in Canada and the Projection of Greenhouse Gas Emission Implications" (March, 2006).

Industrial, Commercial and Institutional

IC&I wastes include: industrial materials, which are generated by manufacturing, and primary and secondary industries, and are managed off-site from the manufacturing operation; commercial materials, which are generated by commercial operations, such as shopping centres, restaurants, offices and others; and institutional materials that are generated by institutional facilities, such as schools, hospitals, government facilities, seniors homes, universities, and others.[3]

Construction, Renovation & Demolition

CR&D wastes refer to wastes generated by construction, renovation and demolition activities. It generally includes materials such as wood, drywall, certain metals, cardboard, doors, windows, wiring and others. It excludes materials from land clearing on areas not previously developed as well as materials that include asphalt, concrete, bricks and clean sand or gravel.[4]

Local Government Recycling/Diversion

Local government recycling/diversion programs include material recycling, organics composting[5] and other waste diversion programs offered by local governments. Recycling is the process whereby a material (for example, glass, metal, plastic, paper) is diverted from the waste stream and potentially remanufactured into a new product or used as a raw material substitute. Local government recycling/diversion figures do not include industry product stewardship, which is measured separately.

Industry Product Stewardship Recycling/Diversion

Industry product stewardship is another form of diversion of waste from landfills. It refers specifically to the collection of materials for reuse or recycling that may offer some sort of incentive for the consumer. Many manufacturers now provide programs to their consumers to recycle or safely dispose of their products. In some cases, consumers pay environmental fees to recover the costs of these programs, and deposits as incentives to participate in the return programs. This term most frequently refers to the return of materials such as beverage containers, tires, paints, batteries, pesticides and motor oil.[6]

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[3] It should be noted that since large industrial facilities often manage their own waste, it is likely that at least some truly "industrial" waste is not included in municipal reports of IC&I residual materials.

[4] Most regions do not distinguish between these different sources of construction, renovation and demolition waste. As such, it is very difficult to estimate this sector's contribution to the waste stream.

[5] Note that organics that are diverted from the waste stream through private household composting are not included in recycling/diversion data

[6] For a list of industry product stewardship programs currently operating in BC, as well as upcoming program initiatives, see the BC Ministry of Environment's website:
http://www.env.gov.bc.ca/epd/recycling/index.htm

METHODOLOGY

There are a number of dynamics that can impact the amounts of waste generated, disposed and recycled or diverted for another purpose. The projections in this report take into account many significant factors and, wherever possible, use data associated with these aspects in developing the three forecast scenarios. Some of the key factors that impact waste generation are population, income, employment and trends in waste generation. It should be noted that many non-quantified issues have the potential to impact multiple areas of waste management. For example, recycling is affected by collection and processing costs and logistics, revenue potential, future marketability, and the ability and willingness of people to perform the tasks necessary to recycle materials. Since waste streams among different sectors vary in terms of their composition and general management, they are addressed separately in these projections.

Wherever possible, specific local waste characterization data was used to develop estimates in this report. Data provided from Statistics Canada for disposal tonnage is paired with waste characterization data from regional landfill audits and regional demographic statistics to develop projections for each of the three aforementioned sectors (residential, IC&I and CR&D). A multitude of resources including documents and individuals were used in the development of waste flow estimates for British Columbia. Key sources of data for this project include:

- Historical data from the BC Ministry of Environment's "BC Municipal Solid Waste Tracking Report, 2006"
- Waste management industry reports from multiple BC municipalities
- Publications and/or individual contacts from waste management industry and stewardship agencies
- Statistics Canada's annual "Waste Management Industry Survey Results – Business and Government Sectors"

The starting point for any projection of waste quantities must be the current status of solid waste management. In addition to establishing the current quantities of waste generated, recycled and disposed, suppositions must be made as to what might impact such rates in future years. The future picture of waste management in BC is dependent on how (and if) current waste management practices in the province's municipalities change in future years. Since there are various potential scenarios that would alter current waste management strategies, a three-scenario model was developed: one that assumes current diversion rates remain the same and current and planned industry product stewardship programs proceed as planned, except CR&D waste programs do not materialise as quickly as expected (Scenario 1); one whereby measures are taken to increase diversion rates, particularly with respect to organics, and where CR&D programs are implemented (Scenario 2); and one where diversion practices are increased at an accelerated rate, particularly with respect to organics, and CR&D programs are implemented and achieve high performance (Scenario 3). Projections for each scenario were developed for the years leading up to 2025. Below is a general description of how

forecasts were developed for the purpose of each of these scenarios and respective components.

Disposal

Since the province's regions vary significantly in many facets, such as population density, core economic industries and income, data derived from different regional districts (RDs) were examined. Disposal data by regional district were collected from sources such as BC Municipal Solid Waste Tracking Reports from the Ministry of Environment and reports from individual municipalities and regional districts. Using available data to determine ratios, overall disposal tonnage was broken out into three sectors: Residential, Industrial, Commercial and Institutional (ICI); and Construction, Renovation and Demolition (CR&D). Gaps in this data were filled using the pattern of change for the province as a whole. For regions with no information, ratios for a nearby region with similar demographic and economic structure were used to estimate sectoral breakdown. Each of the three sectors was forecasted separately.

For the residential sector, the forecast was developed using regional growth in total income. This total income was projected by taking the BC Stats' population forecast (PEOPLE 36) for each RD and multiplying by an average income projection for the development region in which the RD is located. The average income was calculated using income by occupation from the 2006 Census and applying it to the projection of employment by occupation by development region from the BC Labour Market Scenario Model, 2011 (BCLMSM).[7] Since the employment by occupation from the BCLMSM only goes out to 2020, projected population growth was used to grow the residential disposal out to 2021-2025.

For ICI, the projection was based on growth in employment by industry by region from the BCLMSM. A weighted average of industries was used based on research in other jurisdictions, combined with subjective judgment of which industries are responsible for most waste disposed of in landfills based on the waste composition figures from the 2010 BC Stats report ("British Columbia's Solid Waste Flow, 2006").

For CR&D, the model applied growth in employment by region for the construction industry from the BCLMSM.

Once figures were derived for each region, they were summed to a British Columbia total for each sector.

Local Government Recycling/Diversion

Calculating local government recycling/diversion was much more difficult since historical data is extremely sparse. Some data are available from BC's Solid Waste Flow Tracking reports, but only to 2000. Various RDs also have data for selected years;

[7] "British Columbia Market Outlook 2010-2020" offers a summary of the output from the BCLMSM. It is available at: http://www.workbc.ca/docs/BCLMOutlook.pdf.

however, how some regions define 'recycling' tends to differ significantly. For example, some RDs choose to include concrete and asphalt in their recycling weight, whereas many do not, thereby resulting in unrealistic weight (tonnage) differences between respective RDs. Some adjustments were made to regional data to account for these discrepancies. Wherever possible, per capita rates were calculated with existing data, and gaps in some RDs were filled using growth rates from nearby regions. Estimated per capita rates were then applied to population data to arrive at estimates for the base year (2010). Since there are no regional data (or very little) by sector for recycling, the BC data from Statistics Canada's Waste Management Industry Survey was used to split the recycling category into residential, ICI and CR&D. An assumption was made that these rates will remain relatively static throughout the projection period as, historically, this appears to have held true. For *Scenario 1*, it was assumed that the diversion rate for each region would remain unchanged from 2010. Once again, the regional figures were summed to arrive at a British Columbia total for each sector.

Industry Product Stewardship Recycling/Diversion

Data for most of BC's industry product stewardship programs are only available at the provincial level. In order to acquire the most accurate estimates for such programs, as much data as possible were collected from various program reports. Gaps were filled using population growth.

In response to recommendations from the Canadian Council of Ministers of the Environment (CCME), British Columbia has decided to implement a new stewardship program for packaging and printed paper. The program, which is set to begin in 2014, will involve large quantities of waste material and is therefore a significant factor in the stewardship portion of the forecast.[8] For this new program, data from a Multi-Material British Columbia report released in February 2012 were used to determine the likely amount that would be shifted from disposal and local government recycling/diversion to industry product stewardship recycling/diversion.[9]

For the *Scenario 1* projection, population growth from the PEOPLE 36 projection was applied to current industry product stewardship collection rates. There was also an adjustment made to shift a substantial portion of packaging and printed material from

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[8] Packaging and printed paper have been identified as priorities for product stewardship programs by the Canadian Council of Ministers of the Environment (CCME) in its Canada-wide Action Plan for Extended Producer Responsibility (EPR). CCME's Extended Producer Responsibility Task Group was established to provide guidance on the development and implementation of the EPR. CCME is engaged in developing tools and resources for environmentally sound waste management in Canada, promoting sustainable use of materials and resources to reduce negative environmental impacts, and encouraging waste minimization. Areas of current and past work include: biosolids, compost, E-waste, hazardous waste, construction and demolition materials and packaging. For more information on CCME's program initiatives including a full list of material types in Phase 1 and 2 of program implementation, see the Canada-wide Action Plan report: http://www.ccme.ca/assets/pdf/epr_cap.pdf

[9] The report, prepared by Glenda Gies & Associates, titled "Current System for Managing Residential Packaging and Printed Paper in British Columbia" is available at: http://rcbc.bc.ca/files/u7/mmbc_120201_CurrentSystemReport.pdf

local government recycling/diversion to industry product stewardship starting in 2014. For the *Scenario 2* and *Scenario 3* diversion expansion scenarios, an assumption was made that most of the stewardship programs that have been operating at length have reached maximum (or close to maximum) levels of participation. New programs, such as the packaging and printed paper stewardship program and a program for construction and demolition materials, will drive most of the growth, although some existing programs that are in early implementation stages are also expected to see some increase.

Scenarios 2 and 3

In developing the diversion projection models for scenarios 2 and 3, composition data from BC Stats' "British Columbia's Solid Waste Flow, 2006: Summary Report" were used to develop different diversion ratios for each waste type. For example, for organic waste, there is a push by many municipalities to prevent this waste from being landfilled; therefore, it is likely that there will be more success at diverting organic waste compared to some other waste types.[10] Similarly, the aforementioned forthcoming new industry product stewardship program for paper and packaging should help in diverting more paper and plastic from landfills.

The diversion rates chosen for each waste type were partially based on the current diversion rates for products in the Capital Regional District, given that this region has some of the most comprehensive reporting of data on recycling and disposal by waste composition.[11] The same rates by waste type were used for both the residential and ICI sectors. The rates chosen were applied to the 2006 data from the BC Stats report and a potential amount diverted was calculated for each scenario for each sector. These overall rates were applied to the 2025 disposal figures by sector and linear growth was assumed for 2010 to 2025 to calculate the interim years. In *Scenario 2*, residential disposal was assumed to be 64% of the *Scenario 1* figure for 2025. For ICI, it was 68% and for CR&D, it was 70%. In *Scenario 3*, residential disposal was set at 29% of the 2025 figure in *Scenario 1*, while ICI and CR&D were 34% and 40% respectively.

Local government recycling/diversion tonnage was calculated by taking the difference between the *Scenario 1* and specific scenario 2 or 3 disposal figures for each sector and subtracting the increase in industry product stewardship recycling/diversion based on a 45/55 split between residential and ICI.

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[10] Note that generation figures are assumed to remain unchanged between the two scenarios, but in reality, much of the organics diverted could end up in back yard composting and would therefore not really enter either the disposal or recycling streams. For simplicity, this projection just includes that amount in the local government recycling/diversion figures.

[11] See the Capital Regional District's website for detailed waste composition reports for that region: http://www.crd.bc.ca/waste/reportspublications.htm

Data Limitations

There are several limitations to both existing waste management data as well as the data projected for the purposes of this report.[12] Readers are strongly advised to use caution with any of the estimated values provided, and rounding is recommended as the data is not as precise as it may appear. Some of the most notable impediments to producing reliable provincial data for waste management as a whole include the following:

- Although it is assumed that each region tracks their waste statistics to the best of their ability, differences in the methods and frequency of data gathering pose significant challenges in obtaining up-to-date data.

- BC's RDs are diverse and differ significantly across the board in facets such as population density, industrial capacity and geographical topography. As such, it is difficult to make assumptions for regions that have no available waste management data.

- Of the regions that do have relatively recent data for municipal solid waste, few have a breakdown by sector and fewer still have sectoral splits for rates of diversion.

- Generation,[13] disposal and recycling data provided in Statistics Canada's WMIS is often inconsistent with locally-produced data. Given the variability of waste materials, auditing solid waste streams for the purpose of characterization is riddled with risk. The potential for sampling and measurement errors is high, partly because municipalities usually find it more feasible and cost-effective to conduct waste audit "snap shots." These provide results that are merely *indicative* of waste flow patterns and are not to be considered concretely representative.

- The differences in the terminology that the various sources use can create many operational difficulties when surveys are in the field, as well as when results are being compared.

- Each sector is affected differently by some of the methodological difficulties present in the data sources.

The aforementioned difficulties point to a substantive gap in waste management data. This speaks to the need to develop a standard practice for reporting disposal and diversion, by which reliable data can be collected across BC's municipalities.

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[12] For a more detailed outline of data limitations, see the BC Stats/Ministry of Environment report by Jade Norton: "British Columbia's Solid Waste Flow, 2006" (February, 2010) and the Natural Resource Canada report by Robert Sinclair: "An Analysis of Resource Recovery Opportunities in Canada and the Projection of Greenhouse Gas Emission Implications" (March, 2006).

[13] Total generation is the sum of total residential and non-residential solid waste disposed of in an off-site disposal facility and the total materials processed for recycling at an off-site recycling facility.

PROJECTION ANALYSIS

This section provides information regarding the quantity of solid waste expected to be generated from 2010 to 2025, along with projections of how much of that waste could be recycled by local governments, passed through industry product stewardship programs, otherwise diverted, and disposed. This time-series approach uses past data and their distribution in order to predict future waste trends.

It goes without saying that the future of BC's waste disposal rates is heavily reliant on the number, type and adoption rate of waste diversion programs by the province and its municipalities. Altering the current trend and ensuring further waste prevention strategies could include measures such as further education, incentives, disincentives, and increased regulations. As existing recycling, industry product stewardship and other programs become more common and with the development of new programs, more waste will be diverted from landfills, which should impact per capita disposal at the province's landfills. Historical data confirm this likelihood. For example, between 2000 and 2010, as numerous programs were implemented and improved upon, the amount of materials diverted for recycling increased dramatically in the province, nearly tripling (+193.3%) from 0.7 million tonnes to 1.9 million tonnes over the ten-year period.

With this in mind, the three projection scenarios described earlier in this report, each with varying degrees of measures taken to divert waste from disposal, have been developed to estimate future solid waste management components.

The figures for 2010 should be considered rough estimates only, given the issues involved with the input data. More accurate and consistent regional data would help improve not only the historical estimates, but also projections of future waste flows. Nevertheless, the scenarios presented here should be useful in predicting the future pressures that will be put on BC's landfills and recycling operations.

Scenario 1

The starting point for any projection of waste quantities must be the current status of solid waste management. For the purposes of these projections, estimates made using existing data for 2010 are considered to be representative of current (status quo) conditions.

In 2010, an estimated 2.9 million tonnes of solid waste were disposed of in BC's landfills. Meanwhile, approximately 1.9 million tonnes of material were diverted from landfills for recycling and a further 242 thousand tonnes were collected through stewardship programs. This amounts to a provincial diversion rate of 43%.

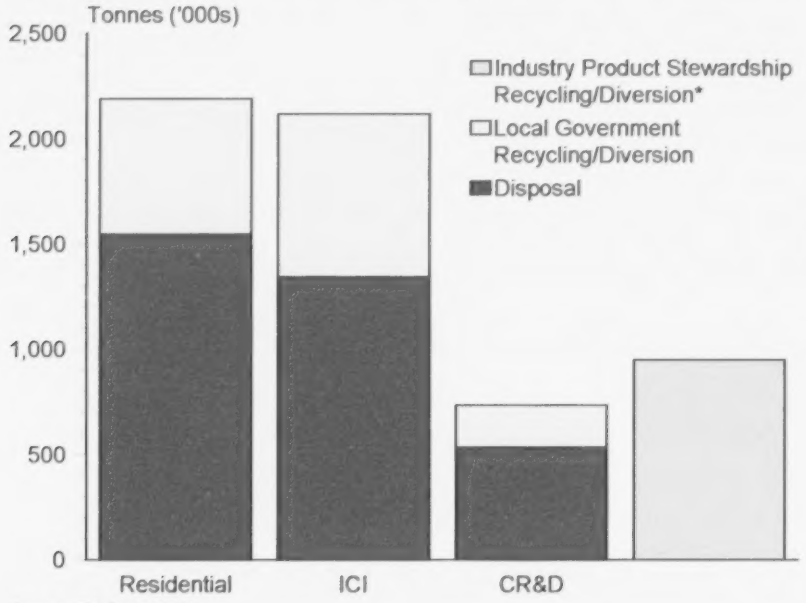
It is predicted that overall waste generation will climb by 17.7% between 2010 and 2025. If current diversion rates are maintained, it is estimated that disposal tonnage in BC will reach 3.1 million tonnes (+7.7%) by 2015 and 3.4 million tonnes (+17.5%) by 2025. The amount of materials recycled/diverted by local governments is forecast to decline 16.4% to 1.6 million tonnes in 2025 due to a shift of a significant portion of goods currently

collected through recycling programs toward new industry product stewardship programs. As a result, industry product stewardship recycling/diversion is predicted to climb substantially (+292.3% to just under one million tonnes).

In terms of waste breakdown by sector, the *Scenario 1* forecast determines that disposal of residential waste (+21.2%) in the province's landfills would see the largest increase between 2010 and 2025, followed by the ICI (+17.6%) and CR&D (+8.0%) sectors. See Table 1 for annual estimates of changes to waste flow under *Scenario 1*.

Figure 1 shows the estimated quantity of waste disposed and recycled by sector in 2025 for *Scenario 1*.

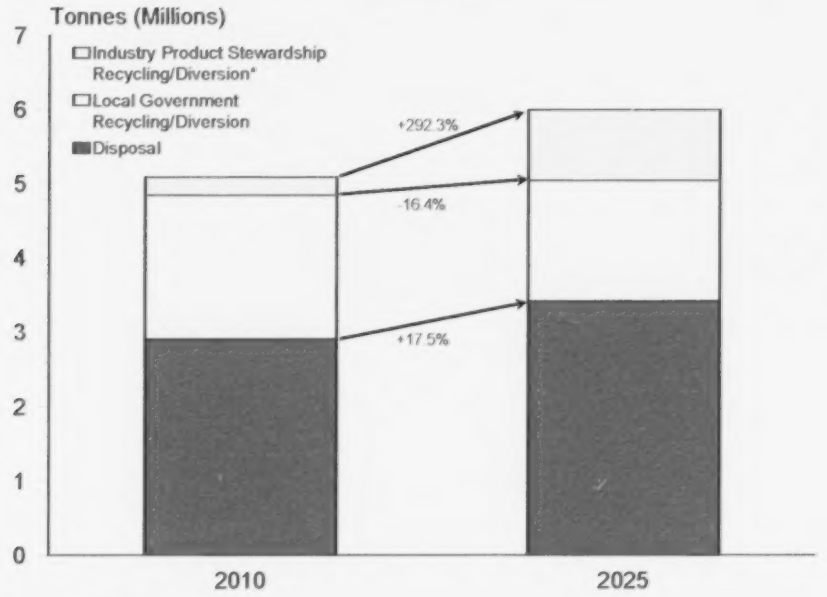
Figure 1: Projected Shares of Waste Generated, 2025 – Scenario 1



Source: BC Stats, 2012
*There is no information available to break Product Stewardship down by sector

Figure 2 compares 2010 with 2025 for *Scenario 1* and shows the increased amount of overall waste generated, broken down by disposal, recycling and product stewardship tonnage.

Figure 2: Combined Residential, ICI and CR&D sector Solid Waste Projections – Scenario 1



Source: BC Stats, 2012

Scenario 2

Recycling has become a fairly regular practice in the past 20 years. In fact, the rate of diversion for BC as a whole nearly doubled between 1990 (21% diversion) and 2010 (43%). Although overall waste generation also continues to climb, the quantity of waste recycled has trended upward at a faster rate. It is important to recognize that despite the fact that the recycling rate may have increased over the past 20 years, waste generation, in absolute terms, could potentially grow by a larger amount, such that the amount of municipal solid waste being handled by landfills could continue to grow.

Given the trend toward increased recycling, stewardship and other practices, a scenario whereby waste diversion efforts experience moderate expansion appears to be a fairly realistic one. For example, the province's regions vary significantly in the recycling options available. Consequently, per capita disposal and recycling rates differ widely across the province. By boosting the regions that are lacking in programs, such as curb-side recycling collection, to levels that some other regions have managed to attain, a substantial reduction in waste disposed at landfills could be attained. Further, should more regions expand upon their existing programs, such as "Blue Box" and "Blue Bag," by including other types of waste, such as organics for composting, the potential for further waste diversion becomes even greater. Indeed, organic materials comprise a hefty share of waste disposed of at landfills in both the residential and the ICI sectors.[14]

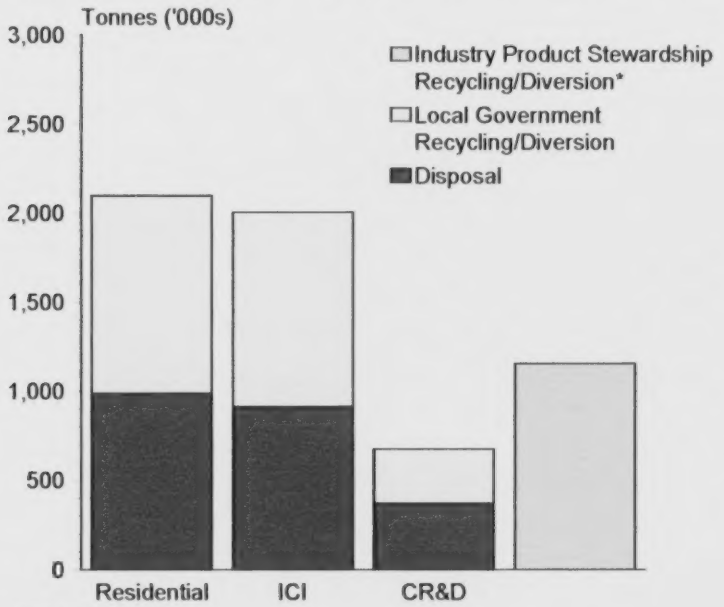
[14] For an estimate of waste composition, see the BC Stats report: "British Columbia's Solid Waste Flow, 2006" (February, 2010).

While overall waste generation in BC will continue to rise (+17.7%), in this scenario, diversion rates are predicted to jump from 43% to 62% between 2010 and 2025. Waste disposal is projected to decline from 2.9 million tonnes in 2010 to 2.3 million tonnes (-21.8%) in 2025, while it is estimated that local government recycling/diversion could jump from 1.9 million tonnes to 2.5 million tonnes (+29.2%) over the same period. Industry product stewardship could also play a significant role in the increased diversion of waste, particularly if the packaging stewardship program gains momentum, potentially climbing 376.5% from 242 thousand tonnes to just under 1.2 million tonnes.

For the different sectors, the *Scenario 2* forecast suggests that CR&D would experience the most notable decrease in disposal of waste (-24.4%), as a result of substantial advancement in recycling and stewardship programs. Disposal of residential waste at landfills could see a decline of about 22.4% by 2025, followed closely by the ICI sector (-20.0%). This would translate to a 43.7% boost in local government recycling of residential materials and a 9.8% increase for the ICI sector. In addition, a significant portion of the waste would be diverted to industry product stewardship programs. See Table 2 for a more detailed annual breakdown of waste flow for this scenario.

Figure 3 shows the estimated quantity of waste disposed and recycled/otherwise diverted by sector in 2025 for *Scenario 2*.

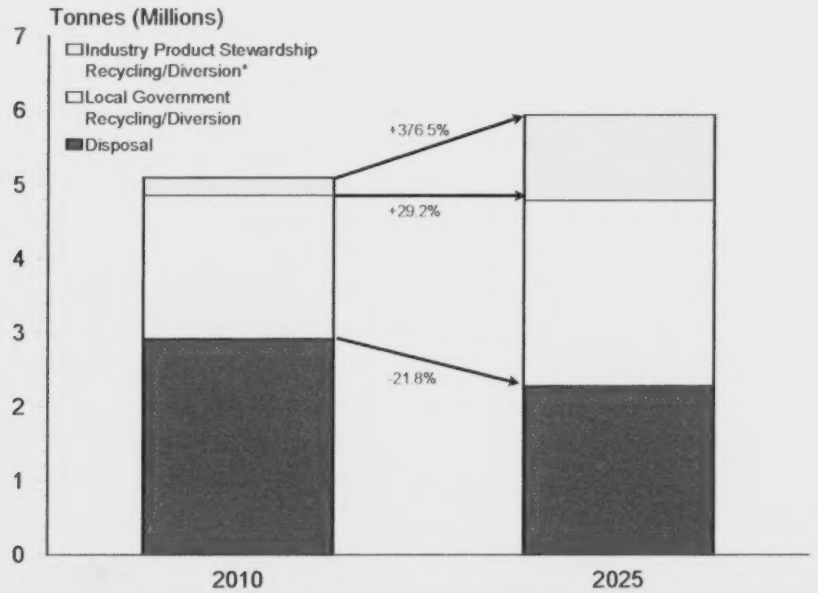
Figure 3: Projected shares of waste generated, 2025 – Scenario 2



Source: BC Stats, 2012
*There is no information available to break Product Stewardship down by sector

Figure 4 shows the estimated trend in disposal, recycling/other diversion and stewardship patterns under *Scenario 2*.

Figure 4: Combined Residential, ICI and CR&D sector Solid Waste Projections – Scenario 2



Source: BC Stats, 2012

Scenario 3

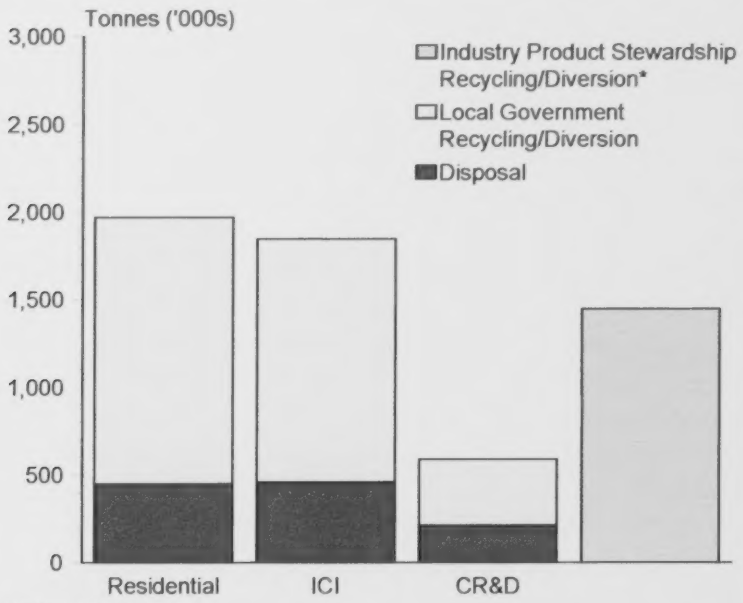
The third and final scenario examined in this projection involves one whereby hard-line strides are made in order to push diversion levels to new heights. While this may seem a somewhat unlikely scenario, it is nonetheless worth examining as something for BC to strive for.

Under this model, a predicted 69.5% leap (to 3.3 million tonnes) in local government recycling/diversion and a 496.2% jump (to 1.4 million tonnes) in industry product stewardship recycling/diversion would cause the volume of waste disposed of in landfills to shrink by nearly two thirds (-61.6%) to 1.1 million tonnes by the year 2025.

With a 96.9% surge in residential recycling and diversion, the amount of household waste disposed of in landfills would shrink to just 448 thousand tonnes by 2025. Similarly, the ICI and CR&D sectors would experience substantial boosts in recycling (+39.8% and +119.0%, respectively), pushing the non-residential disposal tonnage down by well over a third. Table 3 offers annual data estimates for this scenario, with a breakdown by sector.

Figure 5 shows the proportion of waste that would be diverted and disposed in 2025 under *Scenario 3*.

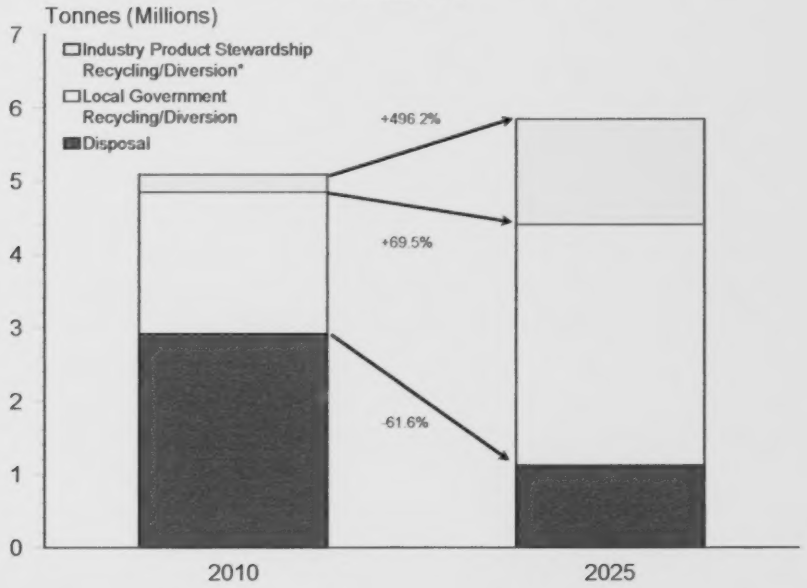
Figure 5: Projected shares of waste generated, 2025 – Scenario 3



Source: BC Stats, 2012
*There is no information available to break Product Stewardship down by sector

Figure 6 shows the difference between diversion and disposal tonnage in 2010 to the projected 2025 values for if diversion were to be increased at an aggressive rate as suggested by *Scenario 3*.

Figure 6: Combined Residential, ICI and CR&D sector Solid Waste Projections – Scenario 3



Source: BC Stats, 2012

DATA TABLES

Table 1 - Scenario One

('000s Tonnes)	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Disposal	2912	2944	2996	3042	3092	3135	3180	3218	3244	3264	3289	3312	3338	3367	3395	3422
Residential	1275	1289	1305	1322	1340	1359	1378	1397	1416	1435	1454	1473	1491	1510	1528	1545
ICI	1142	1159	1180	1199	1221	1238	1257	1272	1282	1289	1298	1305	1313	1323	1333	1343
CR&D	495	496	511	521	531	537	545	549	546	540	537	534	533	535	535	534
Local Gov't Recycling/ Diversion	1935	1955	1991	2024	1776	1513	1533	1546	1554	1556	1563	1571	1580	1593	1606	1618
Residential	771	779	794	807	707	602	610	616	618	619	622	625	629	634	639	644
ICI	993	1003	1022	1038	886	726	736	742	745	746	749	752	756	762	767	773
CR&D	171	173	176	179	182	184	187	189	190	191	193	194	195	197	199	201
Industry Product Stewardship	242	245	248	252	539	835	847	858	870	882	894	905	917	928	940	951
Total Generated	5089	5144	5235	5317	5406	5482	5560	5623	5667	5702	5746	5788	5835	5888	5940	5991
Diversion Rate	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%

Table 2 - Scenario Two

('000s Tonnes)	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Disposal	2912	2869	2827	2784	2742	2700	2657	2615	2573	2530	2488	2446	2403	2361	2318	2276
Residential	1275	1256	1237	1218	1199	1180	1161	1142	1122	1103	1084	1065	1046	1027	1008	989
ICI	1142	1127	1111	1096	1081	1066	1051	1035	1020	1005	990	974	959	944	929	913
CR&D	495	486	478	470	462	454	446	438	430	422	414	406	398	390	382	374
Local Gov't Recycling/ Diversion	1935	2028	2156	2273	2115	1880	1929	1902	1976	2039	2112	2183	2259	2340	2421	2501
Residential	771	811	860	907	844	751	770	786	826	865	905	945	985	1026	1067	1108
ICI	993	1035	1088	1136	1021	861	873	875	902	924	950	974	1001	1030	1060	1090
CR&D	171	182	209	229	250	268	286	241	247	250	257	264	273	283	293	302
Industry Product Stewardship	242	246	253	260	549	903	974	1047	1060	1074	1088	1101	1115	1129	1142	1155
Total Generated	5089	5144	5235	5317	5406	5482	5560	5623	5667	5702	5746	5788	5835	5888	5940	5991
Diversion Rate	43%	44%	46%	48%	49%	51%	52%	53%	55%	56%	57%	58%	59%	60%	61%	62%

Table 3 - Scenario Three

('000s Tonnes)	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Disposal	2912	2792	2672	2553	2433	2314	2194	2075	1955	1836	1716	1597	1477	1357	1238	1118
Residential	1275	1220	1165	1110	1054	999	944	889	834	779	724	669	614	558	503	448
ICI	1142	1096	1051	1005	959	914	868	822	776	731	685	639	594	548	502	457
CR&D	495	476	457	438	420	401	382	363	345	326	307	288	270	251	232	214
Local Gov't Recycling/ Diversion	1935	2105	2310	2503	2422	2206	2331	2144	2233	2373	2520	2666	2816	2971	3126	3280
Residential	771	847	931	1014	988	904	959	944	992	1066	1141	1216	1291	1367	1443	1518
ICI	993	1065	1148	1227	1141	981	1022	973	996	1048	1103	1156	1212	1270	1328	1387
CR&D	171	193	230	261	293	321	350	227	244	259	276	294	313	334	355	374
Industry Product Stewardship	242	246	253	261	551	962	1035	1257	1332	1347	1364	1380	1396	1413	1429	1445
Total Generated	5089	5144	5235	5317	5406	5482	5560	5623	5667	5702	5746	5788	5835	5888	5940	5991
Diversion Rate	43%	46%	49%	52%	55%	58%	61%	63%	66%	68%	70%	72%	75%	77%	79%	81%

Source: BC Stats, 2012